WE CLAIM:

1. A walk reel mower, which comprises:

(a) a reel mower frame on which a power source is carried;

(b) an upwardly extending handle assembly connected at its lower end to the reel mower frame, the handle assembly including a portion which the operator can grip to guide the reel mower frame while the operator walks behind the reel mower frame;

(c) a traction drive for propelling the reel mower frame across the ground, the traction drive being powered by the power source;

(d) a reel cutting unit carried on the front of the reel mower frame, the reel cutting unit having a reel cutting unit frame which carries:

(i) a helically bladed cutting reel which is rotatable about a substantially horizontal, transverse axis;

(ii) a bedknife which cooperates with the cutting reel such the rotatable cutting reel sweeps standing grass against the bedknife to cut the grass; and

(iii) front and rear ground engaging wheel or roller supports for allowing the reel cutting unit to be self supporting and to move over the ground; and

(e) a suspension system comprising relatively rigid links pivotally connecting the reel cutting unit frame to the reel mower frame such that the reel cutting unit can roll about a substantially horizontal, longitudinal axis.

2. The walk reel mower of claim 1, wherein the suspension system comprises at least one pair of inclined rigid links for pivotally connecting the reel cutting unit frame to the reel mower frame such that the reel cutting unit can roll about the longitudinal axis.

3. The walk reel mower of claim 2, wherein each link is located offset from a longitudinal centerline of the reel cutting unit so that the links are on opposite sides of the centerline, and wherein the links are further inclined inwardly relative to one another and relative to a vertical line passing through the upper end of each link so that the lower end of each link is closer to the longitudinal centerline of the reel cutting unit than is the upper end of each link.

4. The walk reel mower of claim 2, wherein lines drawn through the links are inclined towards each other and will intersect at a focal point, and wherein the focal point is located relatively low with respect to the reel cutting unit.

5. The walk reel mower of claim 4, wherein the focal point is located along the longitudinal axis about which the cutting unit rolls.

6. The walk reel mower of claim 5, wherein the focal point is at the center of the bedknife when the reel cutting unit is sitting on flat and level ground.

7. The walk reel mower of claim 2, wherein the suspension system further includes relatively rigid arms for pivotally connecting the reel cutting unit frame to the reel mower frame such that the reel cutting unit can pitch about a substantially horizontal, transverse axis.

8. The walk reel mower of claim 7, further including a cutting unit carrier frame that includes a transverse cross member having downwardly extending, vertical support arms at either end thereof, wherein the inclined rigid links extend

between the cross member of the carrier frame and the reel mower frame, and wherein the vertical support arms are pivotally connected to the reel cutting unit frame.

9. The walk reel mower of claim 8, wherein the lower end of each vertical support arm includes an inwardly protruding circular hub which rotatably engages or journals a shaft of the cutting reel.

10. The walk reel mower of claim 7, wherein lines drawn through the links are inclined towards each other and will intersect at a focal point, and wherein the focal point is located beneath the attachment of the vertical arms to the reel cutting unit frame.

11. A walk reel mower, which comprises:

(a) a reel mower frame on which a power source is carried;

(b) an upwardly extending handle assembly connected at its lower end to the reel mower frame, the handle assembly including a portion which the operator can grip to guide the reel mower frame while the operator walks behind the reel mower frame;

(c) a traction drive for propelling the reel mower frame across the ground, the traction drive being powered by the power source;

(d) a reel cutting unit carried on the reel mower frame, the reel cutting unit having a cutting reel which is rotatable about a substantially horizontal, transverse axis which reel cooperates with a bedknife to cut grass; and

(e) at least one pair of inclined rigid links for pivotally connecting the reel cutting unit frame to the reel mower frame such that the reel cutting unit can roll about a longitudinal axis, wherein each link in the at least one pair is located offset from a longitudinal centerline of the

reel cutting unit so that the links are on opposite sides of the centerline, and wherein the links in the at least one pair are further inclined inwardly relative to one another and relative to a vertical line passing through the upper end of each link so that the lower end of each link is closer to the longitudinal centerline of the reel cutting unit than is the upper end of each link.

12. The walk reel mower of claim 11, wherein lines drawn through the links are inclined towards each other and will intersect at a focal point located at the center of the bedknife.

13. A walk reel mower, which comprises:

(a) a reel mower frame on which a power source is carried;

(b) an upwardly extending handle assembly connected at its lower end to the reel mower frame, the handle assembly including a portion which the operator can grip to guide the reel mower frame while the operator walks behind the reel mower frame;

(c) a traction drive for propelling the reel mower frame across the ground, the traction drive being powered by the power source;

(d) a reel cutting unit carried on the reel mower frame, the reel cutting unit having a cutting reel which is rotatable about a substantially horizontal, transverse axis which reel cooperates with a bedknife to cut grass;

(e) a reel drive for powering the cutting reel, the reel drive being powered by the power source; and

(f) a single gearbox for housing the traction drive and the reel drive.

14. The walk reel mower of claim 13, further including separate clutches used to initiate the traction drive and

the reel drive with the separate clutches both being contained within the gearbox.

15. The walk reel mower of claim 13, wherein the traction drive includes a differential and speed reduction gearing, and wherein the differential and at least some of the speed reduction gearing of the traction drive are contained within the gearbox.

16. The walk reel mower of claim 13, wherein the gearbox also houses a parking brake.

17. The walk reel mower of claim 16, wherein the parking brake comprises a tightenable band brake.

18. The walk reel mower of claim 17, wherein the band brake of the parking brake is tightenable around a drum within the gearbox, the band brake when tightened acting on gearing of the traction drive to prevent the traction drive from rotating.

19. The walk reel mower of claim 13, wherein the traction drive comprises:

(i) a planetary gear carrier having a plurality of planetary gears rotating around a sun gear with the planetary gears and sun gear being continuously driven by the power source when the power source is operating;

(ii) a traction drive clutch drum in engagement with the planetary gear carrier and rotating therewith;

(iii) a ring gear concentrically received around the planetary gear carrier and capable of independent rotation relative to the planetary gear carrier, the planetary gears on the planetary gear carrier in engagement with the ring gear and normally rotating around the ring gear when the traction drive is not actuated;

(iv) a traction drive gear operatively coupled to the ring gear, the traction drive gear further being operatively coupled to ground engaging traction drive wheels or drums; and

(v) a brake for engaging the traction drive clutch drum to stop movement of the planetary gear carrier such that the continued rotation of the planetary gears will then rotate the ring gear and the traction drive gear to power the ground engaging traction drive wheels or drums.

20. The walk reel mower of claim 19, wherein the brake comprises a band brake tightenable around the traction drive clutch drum.

21. The walk reel mower of claim 19, wherein the traction drive further includes a differential operatively coupled to the traction drive gear to power the ground engaging traction drive wheels or drums through independent output shafts.

22. The walk reel mower of claim 13, wherein the traction drive comprises a planetary speed reduction gear mechanism within the gearbox.

23. A traction drive for a walk reel mower having ground engaging, traction drive elements for propelling the walk reel mower over the ground, which comprises:

(a) a planetary gear carrier having a plurality of planetary gears rotating around a sun gear with the planetary gears and sun gear being continuously driven by a power source on the walk reel mower when the power source is operating;

(b) a traction drive clutch drum in engagement with the planetary gear carrier and rotating therewith;

(c) a traction drive gear operatively coupled to the planetary gears, the traction drive gear further being oper-

atively coupled to the ground engaging traction elements; and

(d) a selectively operable brake for engaging the traction drive clutch drum to stop movement of the planetary gear carrier such that the continued rotation of the planetary gears will then rotate the traction drive gear to power the ground engaging traction drive elements.

24. The traction drive of claim 23, wherein the traction drive elements comprise left and right traction drum halves.

25. The traction drive of claim 23, wherein the left and right traction drum halves are driven by the traction drive gear through a differential.

26. The traction drive of claim 23, wherein the brake comprises a band brake tightenable around the traction drive clutch drum.

27. The traction drive of claim 23, wherein the traction drive gear is connected to a ring gear that concentrically surrounds a portion of the planetary gear carrier, the planetary gears on the planetary gear carrier being in engagement with the ring gear to be thereby coupled to the traction drive gear.

28. The traction drive of claim 27, wherein the traction drive further includes:

(a) a parking brake clutch drum on the ring gear; and

(b) a parking brake for engaging the parking brake clutch drum to prevent rotation of the traction drive when the power source is not operating to restrain unintended movement of the walk reel mower.

29. The traction drive of claim 28, wherein the parking brake clutch drum is located between the ring gear and the traction drive gear.

30. The traction drive of claim 23, wherein the parking brake comprises a tightenable band brake located around the parking brake clutch drum.

31. A drive shaft for transferring rotational torque to a reel cutting unit of a reel mower, which comprises:

a drive shaft that has an expandable length and is flexible between each end thereof to accommodate movement of the reel cutting unit relative to the reel mower, wherein the drive shaft is self-lubricating without using petroleum based lubricants.

32. The drive shaft of claim 31, wherein each end of the drive shaft includes a flexible helix beam coupler.

33. The drive shaft of claim 32, wherein each flexible helix beam coupler includes a stub shaft with the stub shafts on each beam coupler pointing towards one another but not contacting one another, and further including an intermediate coupler coupling the stub shafts together such that each stub shaft can slide in and out relative to the intermediate coupler, wherein the stub shafts and intermediate coupler have mating, non-circular cross-sectional configurations.

34. The drive shaft of claim 31, wherein the intermediate coupler is made from a plastic material impregnated with a non-oil based lubricant.

35. A walk reel mower, which comprises:

(a) a reel mower frame on which a power source is carried;

(b) an upwardly extending handle assembly connected at its lower end to the reel mower frame, the handle assembly including a portion which the operator can grip to guide the reel mower frame while the operator walks behind the reel mower frame;

(c) a traction drive for propelling the reel mower frame across the ground, the traction drive being powered by the power source;

(d) a reel cutting unit carried on the reel mower frame, the reel cutting unit having a cutting reel which is rotatable about a substantially horizontal, transverse axis which reel cooperates with a bedknife to cut grass;

(e) a reel drive for powering the cutting reel, the reel drive being powered by the power source; and

(f) a single control handle carried on the handle assembly for selectively controlling the operation of both the traction drive and the reel drive.

36. The walk reel mower of claim 35, wherein the control handle rotates back and forth about a substantially horizontal pivot pin to control the operation of one of the traction drive and the reel drive.

37. The walk reel mower of claim 36, wherein the control handle includes a laterally displaceable toggle at the top which can be pivoted back and forth about another pivot pin to displace the toggle from a first position in which the toggle is aligned with the control handle to a second position in which the toggle is bent to one side out of alignment with the control handle, the toggle controlling the operation of the other of the traction drive and the reel drive.

38. The walk reel mower of claim 37, wherein the control handle controls the operation of the traction drive and the toggle controls the operation of the reel drive.

39. The walk reel mower of claim 37, wherein displacing the toggle is connected to a reciprocal rod extending through the control handle, wherein the reciprocal rod is extended relative to the control handle when the toggle is in the second position thereof to couple the control handle to the reel drive so that pivoting motion of the control handle about the first pivot pin actuates both the traction and reel drives.

40. A walk reel mower, which comprises:

(a) a reel mower frame on which a power source is carried;

(b) an upwardly extending handle assembly connected at its lower end to the reel mower frame, the handle assembly including a portion which the operator can grip to guide the reel mower frame while the operator walks behind the reel mower frame;

(c) a traction drive for propelling the reel mower frame across the ground, the traction drive being powered by the power source;

(d) a reel cutting unit carried on the reel mower frame, the reel cutting unit having a cutting reel which is rotatable about a substantially horizontal, transverse axis which reel cooperates with a bedknife to cut grass;

(e) a reel drive for powering the cutting reel, the reel drive being powered by the power source; and

(f) means on the handle assembly for allowing the operator to selectively control the operation of both the traction drive and the reel drive, wherein the controlling means includes a single pivotal control handle having a toggle that can be toggled to one side so that pivoting motion of the control handle will actuate both the traction drive and the reel drive and movement of the toggle into an aligned position with the control handle will release the reel drive while leaving the traction drive engaged.

41. A walk reel mower, which comprises:

(a) a reel mower frame on which a power source is carried;

(b) an upwardly extending handle assembly connected at its lower end to the reel mower frame, the handle assembly including a portion which the operator can grip to guide the reel mower frame while the operator walks behind the reel mower frame;

(c) a reel cutting unit carried on the front of the reel mower frame, the reel cutting unit having a reel cutting unit frame which carries:

(i) a helically bladed cutting reel which is rotatable about a substantially horizontal, transverse axis; and

(ii) a bedknife which cooperates with the cutting reel such the rotatable cutting reel sweeps standing grass against the bedknife to cut the grass;

(d) a grass basket attached to the reel cutting unit frame ahead of the cutting reel and the bedknife, wherein the grass basket is attached to the reel cutting unit frame by pins on the basket received in sockets on the reel cutting unit frame, and wherein the pins and sockets are configured relative to one another so that the grass basket will not be disengaged if the operator lifts up on the handle assembly.

42. The walk reel mower of claim 41, wherein each socket comprises an upwardly facing trough which includes an upwardly open front portion and an upwardly closed rear portion.

43. The walk reel mower of claim 42, wherein the trough forming each socket is upwardly inclined as it extends forwardly.

44. The walk reel mower of claim 43, wherein each pin includes a downwardly inclined distal leg that is configured so that when the grass basket is flat and level the angle of inclination of the distal leg matches the angle of inclination of the socket allowing the distal leg to be inserted into the socket.

45. A reel cutting unit for a reel mower, which comprises:

(a) a reel cutting unit frame comprising spaced side plates connected to an arcuate back plate;

(b) a helically bladed cutting reel rotatably journalled between the side plates and positioned in front of the back plate;

(c) a bedknife extending between the side plates along the length of cutting reel for cooperating with the cutting reel to cut grass, the bedknife being pivotally adjustable relative to the side plates to compensate for wear in the cutting reel; and

(d) wherein the pivot axis of the bedknife is chosen such that the front edge of the bedknife stays in approximately the same longitudinal location relative to the cutting reel as the front edge of the bedknife rises upwardly to compensate for wear in the cutting reel.

46. A reel cutting unit for a reel mower, which comprises:

(a) a reel cutting unit frame comprising spaced side plates connected to an arcuate back plate;

(b) a helically bladed cutting reel rotatably journalled between the side plates and positioned in front of the back plate;

(c) a bedknife extending between the side plates along the length of cutting reel for cooperating with the cutting reel to cut grass; and

(d) wherein at least portion of the back plate has a closed tubular cross-sectional configuration.

47. The reel cutting unit of claim 46, wherein the back plate is an extruded aluminum back plate.

48. The reel cutting unit of claim 46, wherein the back plate has an upper portion which has the closed tubular cross-sectional configuration.

49. The reel cutting unit of claim 48, wherein the back plate has a lower lip extending from the upper portion, the lower lip of the back plate having a solid, non-tubular cross-sectional configuration with a thickness which is substantially less than the width of the upper portion of the back plate.

50. A back plate for a reel cutting unit of a reel mower, the back plate forming a portion of the reel cutting unit frame and being arcuate with a cutting reel of the reel cutting unit positioned in front of the back plate, which comprises:

a back plate at least a portion of which has a closed tubular cross-sectional configuration.